



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 09/776,599 | 02/01/2001 | Kenneth F. Buechler | 071949-2404 | 9314 |

30542 7590 03/16/2005

FOLEY & LARDNER

P.O. BOX 80278

SAN DIEGO, CA 92138-0278

EXAMINER

EPPERSON, JON D

ART UNIT

PAPER NUMBER

1639

DATE MAILED: 03/16/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/776,599

Applicant(s)

BUECHLER ET AL

Examiner

Jon D. Epperson

Art Unit

1639

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 June 2004.
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 30-44 and 46 is/are pending in the application.
- 4a) Of the above claim(s) 32-41, 43, 44 and 46 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 30 and 31 is/are rejected.
- 7) ☒ Claim(s) 42 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Status of the Application

1. The Response filed June 14, 20004 is acknowledged.
2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Status of the Claims

3. Claims 30-46 were pending. Applicants amended claim 30 and canceled claim 45. Therefore, claims 30-44 and 46 are currently pending. Claims 32-41, 43-44 and 46 are drawn to non-elected species and/or inventions and thus these claims remain withdrawn from further consideration by the examiner, 37 CFR 1.142(b), there being no allowable generic claim. Therefore, claims 30-31 and 42 are examined on the merits in this action.

Withdrawn Objections/Rejections

4. All rejections are withdrawn in view of Applicants' arguments and/or amendments.

New Rejections

Claim Rejections - 35 USC § 103

5. Claim 30 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sounik et al. (EP 0391284 A1) (Date of Publication is **October 10, 1990**) (of record) and Lazzouni et al. (U.S. Patent No. 5,460,646) (Filing Date is **November 10, 1994**).

For *claim 30*, Sounik et al. (see entire document) teach the formation and use of

water insoluble dye mixtures (i.e., more than one or “two” water insoluble dye compounds) including mixtures that comprise substituted and/or unsubstituted silicon phthalocyanine, naphthalocyanine and anthracyanine structures (e.g., see Sounik et al., page, 2, last paragraph; see also claims, especially claims 1-5 and 9; see also page 4, lines 3-23).

The prior art teachings of Sounik et al. and Applicants admission in the specification differ from the claimed invention as follows:

For *claim 30*, Sounik et al. are deficient in that they do not specifically teach the use of either “dimethylhexylvinylsilyloxi~~de~~” or “trihexylsilyloxi~~de~~” as the ligands to the Si metal. Sounik et al. only disclose a genus that encompasses Applicants’ claimed compounds and a dimethyloctadecylsilo~~xi~~de “methylene” homologue (e.g., see Sounik et al. Examples 1-2, wherein “dimethyloctadecylsilo~~x~~[ide]” is disclosed; see also page 4, lines 20-24 wherein any “siloxy” group is disclosed by the generic formula wherein Z is defined as an “siloxy” group, which would include the “dimethyloctadecylsilo~~xi~~de” group in Examples 1-2 and the “dimthylhexylvinylsilyloxi~~de~~” and “trihexylsilyloxi~~de~~” groups claimed by Applicants). The Sounik et al. reference is also silent with regard to the size of the fluorescent particles (e.g., between 0.1 nm ad 5000 nm).

However, Lazzouni et al. teach the following limitations that are deficient in Sounik et al. and the admission of prior art in the specification:

For *claim 30*, Lazzouni et al. (see entire document) teach the use of silicon (IV) 2,3-naphthalocyanine bis(trihexyl-silyloxi~~de~~) (e.g., see Lazzouni et al., column 2, lines 59-60; see also claim 18). Lazzouni et al. also disclose various particle sizes (e.g., see

Art Unit: 1639

column 5, line 24 wherein from about 5 to about 7 microns is disclosed; see also column 6, line 17).

It would have been prima facie obvious to one skilled in the art at the time the invention was made to make the tetrazaporphin dye mixtures as taught by Sounik et al. (e.g., see abstract) using the silicon (IV) 2,3-naphthalocyanine bis(trihexyl-silyoxide) tetrazaporphin as disclosed by Lazzouni et al. because Lazzouni et al. explicitly state that their dyes can be used for "... a variety of applications, such as to prepare a surface having a prerecorded pattern of optically readable pixels containing encoded location information" (see Lazzouni et al., column 5, lines 30-46; see also column 1, lines 14-17, "Infrared (IR) absorbing dyes have numerous applications, such as optical recording systems"), which would encompass the recording application disclosed by Sounik et al. (e.g., see Sounik et al., page 2, lines 12-13, "Porphyrins and tetrazaporphins are organic materials which have utility in a broad range of applications, such as pigments, laser dyes, photoconductors, optical recording media, and the like"; see also page 3, lines 15-18). In addition, Sounik et al. explicitly disclose a genus of tetrazaporphin dyes that encompass the silicon (IV) 2,3-naphthalocyanine bis(trihexyl-silyoxide) tetrazaporphin dye as disclosed by Lazzouni et al. (e.g., see Sounik et al., page 4, lines 5-24 wherein Y=silicon, L1, L2, L3 and L4 are naphthalo structures and Z is a siloxy group wherein n=2 to indicate "bis" substitution which would include the bis(trihexyl-silyoxide) group disclosed by Lazzouni et al.).

Furthermore, a person of skill in the art would have been motivated to use the silicon (IV) 2,3-naphthalocyanine bis(trihexyl-silyoxide) tetrazaporphin dye disclosed by

Lazzouni et al. because Lazzouni et al. teach that the silicon (IV) 2,3-naphthalocyanine bis(trihexyl-silyoxide) tetrazaporphin dye is a preferred embodiment (e.g., see claim 18) because this dye [1] is "... stable and soluble in a wide variety of organic solvents, particularly non-polar solvents" (e.g., see column 3, list paragraph) which "... preserves [the dyes] optical properties" (e.g., see column 7, 20-23) and [2] possesses favorable absorption characteristics including "... light fastness ... [that] was excellent ... [and] not affected after continuous exposure to intense light for several hours" (e.g., see column 7, first full paragraph) and [3] "strong absorption peaks in the near-IR and low activity in the visible wavelength range" (e.g., see column 7, lines 13-14), which are all art-recognized advantages for these types of dyes (e.g., see Lazzouni et al., column 1, lines 35-38, "Typically, it is desirable for the dyes used in these application to have strong absorption in near-IR at the emission wavelengths of semiconductor lasers, light fastness, and resistance to chemical and thermal damage).

Likewise, it would have been prima facie obvious to use the tetrazaporphin dyes as taught by Sounik et al. in conjunction with the silicon (IV) 2,3-naphthalocyanine bis(trihexyl-silyoxide) dyes as disclosed by Sounik et al. explicitly state that dye mixtures can be used for optical recording systems (e.g., see Sounik et al., page 2, lines 12-13, "Porphyrins and tetrazaporphins are organic materials which have utility in a broad range of applications, such as pigments, laser dyes, photoconductors, optical recording media, and the like"; see also page 3, lines 15-18), which would encompass the optical recording systems disclosed by Lazzouni et al. (e.g., see Lazzouni et al., column 5, lines 30-46, "... a variety of applications, such as to prepare a surface having a prerecorded pattern of

Art Unit: 1639

optically readable pixels containing encoded location information”; see also column 1, lines 14-17, “Infrared (IR) absorbing dyes have numerous applications, such as optical recording systems”). Furthermore, Sounik et al. states, “There is a continuing interest in the development of new and improved porphyrin and tetrazaporphin type structures for specialized applications deriving from unique physiochemical and optical properties. Accordingly, it is an object of this invention to provide tetrazaporphin compositions which exhibit a novel combination of optical properties” (e.g., see Sounik et al., lines 28-31).

In addition, both references disclose the same and/or similar compounds and thus would be expected to possess the same properties (e.g., see Sounik et al., page 4, lines 5-24 wherein Y=silicon, L1, L2, L3 and L4 are naphthalo structures and Z is a siloxy group wherein n=2 to indicate “bis” substitution which would include the bis(trihexylsilyloxy) group disclosed by Lazzouni et al.). A prima facie case of obviousness may be made when chemical compounds have very close structural similarities and similar utilities. “An obviousness rejection based on similarity in chemical structure and function entails the motivation of one skilled in the art to make a claimed compound, in the expectation that compounds similar in structure will have similar properties.” *In re Payne*, 606 F.2d 303, 313, 203 USPQ 245, 254 (CCPA 1979). See *In re Papesch*, 315 F.2d 381, 137 USPQ 43 (CCPA 1963) (discussed in more detail below) and *In re Dillon*, 919 F.2d 688, 16 USPQ2d 1897 (Fed. Cir. 1991) (discussed below and in MPEP Section 2144) for an extensive review of the case law pertaining to obviousness based on close structural similarity of chemical compounds. See also MPEP Section 2144.08, paragraph

II.A.4.(c).

Finally, a person of skill in the art would have reasonably expected to be successful because both references disclose the use of the same tetrazaporphin dyes. That is, the silicon (IV) 2,3-naphthalocyanine bis(trihexyl-silyoxide) disclosed by Lazzouni et al. (e.g., see Lazzouni et al., claim 18) falls entirely within the scope of the genus of tetrazaporphin dyes disclosed by Sounik et al. (e.g., see Sounik et al., page 4, lines 5-24 wherein Y=silicon, L1, L2, L3 and L4 are naphthalo structures and Z is a siloxy group wherein n=2 to indicate “bis” substitution which would include the bis(trihexyl-silyoxide) group disclosed by Lazzouni et al.). In addition, both references disclose the use of thin films on glass and textile substrates (e.g., compare Lazzouni et al., column 1, last paragraph, “Printing inks are typically applied in thin films on a wide variety of substrates, such as ... textiles, and glass” to Sounik et al., page 2, lines 32-33, “A solution of an invention tetrazaporphin mixture can be cast, sprayed or spin-coated to form thin films on substrates such as optical glass”). Thus, the dyes disclosed by Lazzouni et al. are entirely compatible with the dye mixture disclosed by Sounik et al.

6. Claims 30 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sounik et al. (EP 0391284 A1) (Date of Publication is **October 10, 1990**) (of record) and Lazzouni et al. (U.S. Patent No. 5,460,646) (Filing Date is **November 10, 1994**) and Brinkley et al. (U.S. Patent No. 5,326,692) (Filing Date is **May 13, 1992**).

For **claim 30**, Sounik et al. teach all the limitations stated in the 35 U.S.C. 103(a) rejection above (incorporated in its entirety herein by reference), which renders obvious

Art Unit: 1639

claim 30.

The prior art teaching of Sounik et al. differ from the claimed invention as follows:

For *claim 31*, the combined prior art teachings of Sounik et al. and Lazzouni et al. differ from the claimed invention by not specifically reciting the use of latex particles.

However, Brinkley et al. teach the following limitations that are deficient in Sounik et al.:

For *claim 31*, Brinkley et al. (see entire document, especially abstract) teach the use of latex particles (see Brinkley et al., e.g., see figures 1-3 and Summary of Invention).

It would have been obvious to one skilled in the art at the time the invention was made to use the fluorescent dyes as disclosed by the combined teachings of Sounik et al. and Lazzouni et al. into “the microparticles incorporating a series of two or more fluorescent dyes” as disclosed by Brinkley et al. because Brinkley et al. explicitly state that porphyrin dyes such as phthalocyanine can be used (e.g., see Brinkley et al., abstract; see also column 11, line 45, “Typically, the dyes are selected from ... phthalocyanines ... and porphyrin dyes), which would include the dyes disclosed by the combined teachings of Sounik et al. and Lazzouni et al. Furthermore, one of ordinary skill in the art would have been motivated to use the dyes of Lazzouni et al. Lazzouni et al. teach that the silicon substituted porphyrin dyes like silicon (IV) 2,3-naphthalocyanine bis(trihexylsilyoxide) tetrazaporphin dye is a preferred embodiment (e.g., see claim 18) because this dye [1] is “... stable and soluble in a wide variety of organic solvents, particularly non-polar solvents” (e.g., see column 3, list paragraph) which “... preserves [the dyes] optical

properties” (e.g., see column 7, 20-23) and [2] possesses favorable absorption characteristics including “... light fastness ... [that] was excellent ... [and] not affected after continuous exposure to intense light for several hours” (e.g., see column 7, first full paragraph) and [3] “strong absorption peaks in the near-IR and low activity in the visible wavelength range” (e.g., see column 7, lines 13-14), which are all art-recognized advantages for these types of dyes (e.g., see Lazzouni et al., column 1, lines 35-38, “Typically, it is desirable for the dyes used in these application to have strong absorption in near-IR at the emission wavelengths of semiconductor lasers, light fastness, and resistance to chemical and thermal damage). Finally, one of ordinary skill in the art would have reasonably expected to be successful because all three references use porphyrin dyes. In addition, both Sounik et al. and Brinkley et al. indicate that the dyes are compatible with polymers like polyacrylamide (e.g., compare Brinkley et al., column 13, line 56 to Sounik et al., page 2, line 50). Furthermore, Brinkley et al. acknowledges that “[l]aser sources are available to provide many excitation lines over the spectrum from the UV to the infrared; to excite a wide range of fluorescent dyes” (e.g., see Brinkley et al., column 6, lines 55-58), which would encompass the dyes disclosed by the combined teachings of Lazzouni et al. and Sounik et al. (e.g., see Lazzouni et al. wherein, for example, infrared is disclosed). Finally, Sounik et al. acknowledges that the tetrazaporphin dyes can be used as mixtures (e.g., see Sounik et al., title).

Art Unit: 1639

Allowable Subject Matter

7. Claim 42 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

Applicant's amendment necessitated any new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jon D Epperson whose telephone number is (571) 272-0808. The examiner can normally be reached Monday-Friday from 9:00 to 5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Andrew Wang can be reached on (571) 272-0811. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (571) 272-1600.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Jon D. Epperson, Ph.D.
March 8, 2005

RECEIVED
FEB 10 2005
